Image Manipulation

MiPACS Dental Enterprise Viewer

The Toolbar

The toolbar can be used to access Image Processing and Image Analysis tools. Brightness, contrast, colorization, magnification, rotation and many more effects can be accessed here.

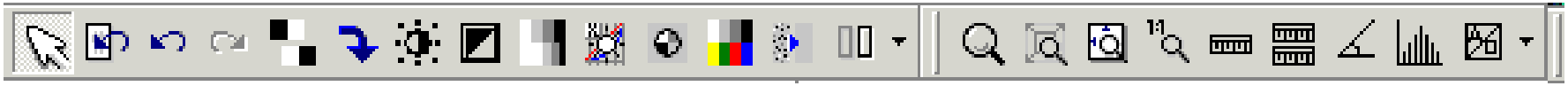


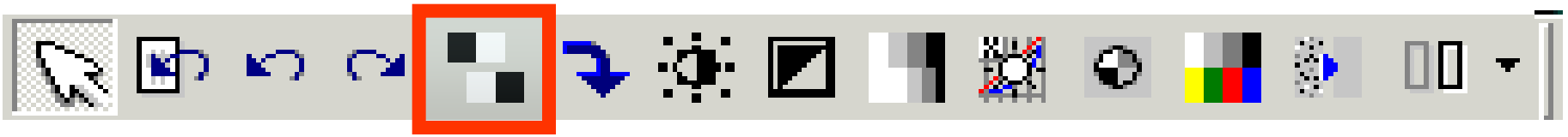
Image Processing Tools

Image processing tools can be found on the left side of the toolbar.

These tools can be used to increase the diagnostic quality of the image. In addition, If an X-ray is taken upside down or backwards, it can be changed to its correct position using these tools without having to re-expose the patient.

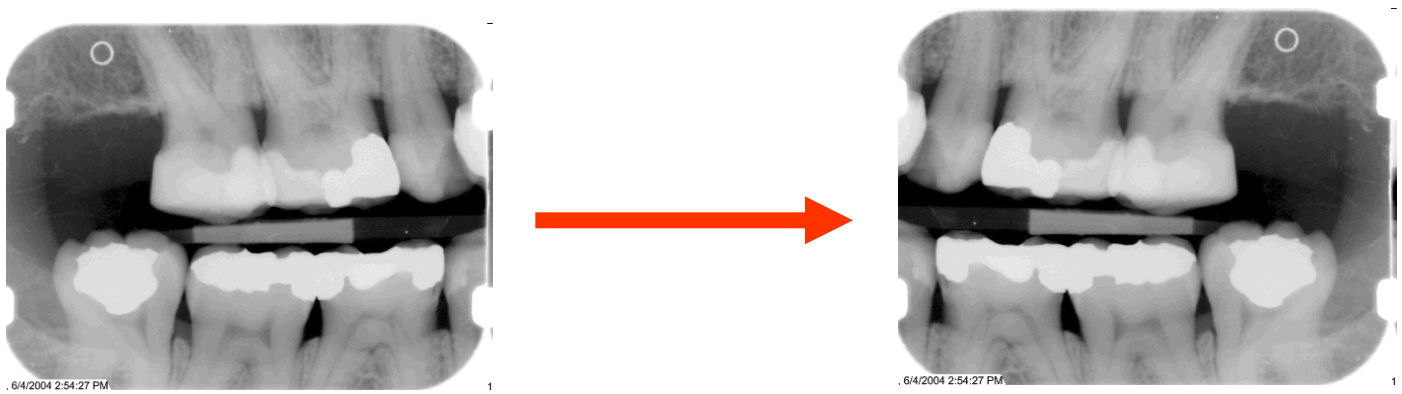
All effects that are placed on the image using these tools can be done without losing the original image. The image can be reverted to its original state by clicking one button.

Mirror Image

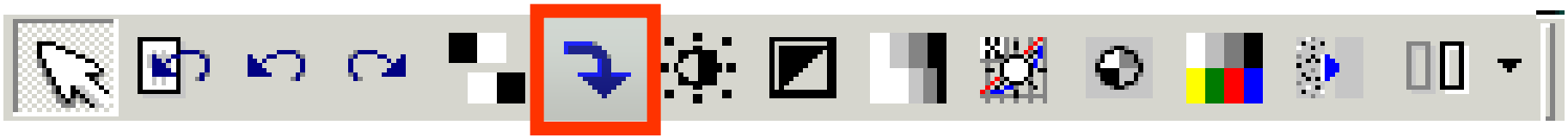


This tool is used to flip the image horizontally, creating a mirror image.

•Select the Image you would like to mirror, and press the mirror button.

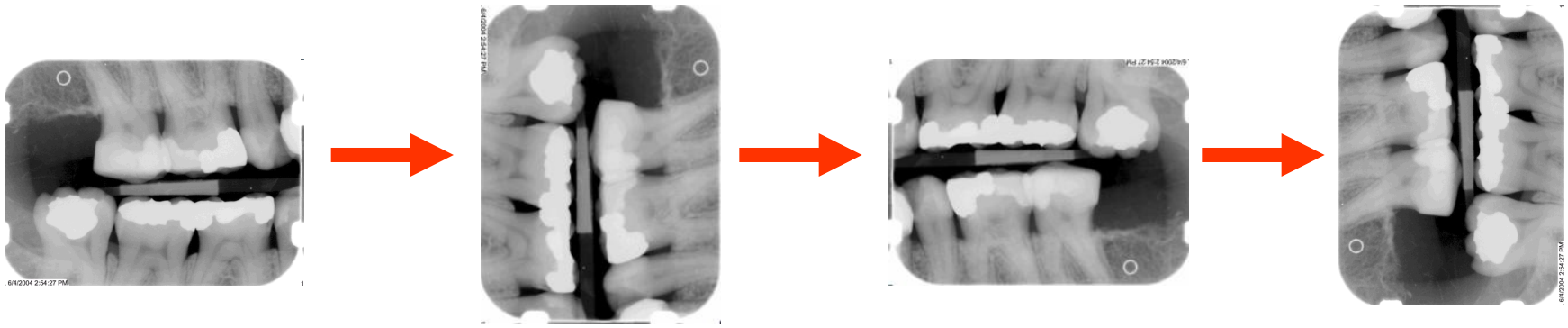


Rotate Image 90º

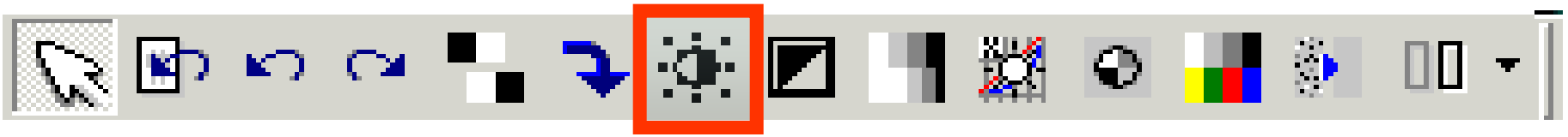


This Tool is used to rotate the image 90º at a time.

•Select the image you would like to rotate and press the Rotate 90º button. Press again to multiple times to continue to rotate it 180º or 270º



Brightness and Contrast

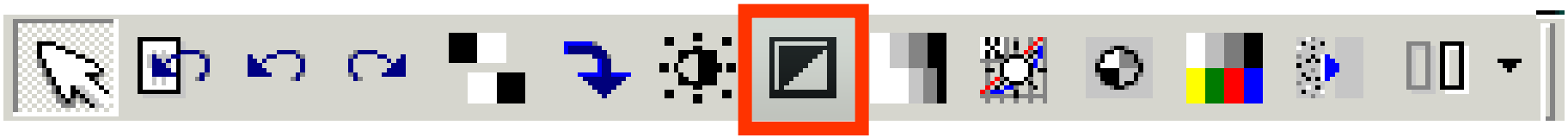


This tool shows and hides the Brightness/Contrast box. You can adjust the brightness and contrast of the image in two ways.

•Click on an image and hold the mouse button down. Move the mouse left and right to adjust the brightness. Move it up and down to adjust the contrast. To stop adjusting, let up on the mouse button.

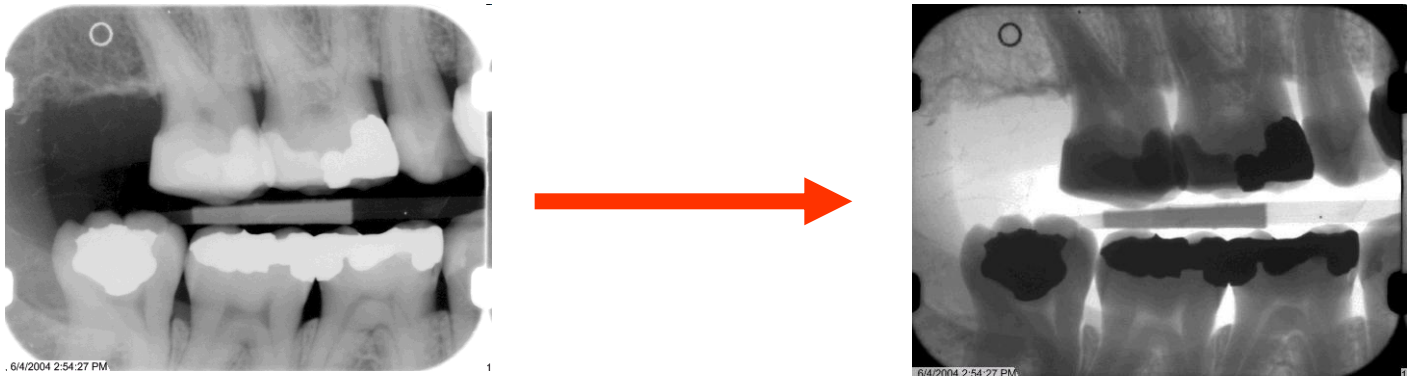
•When the Brightness/Contrast control box is showing (by clicking on the button indicated above), you can adjust the brightness and contrast by moving the pink circle in the control box shown below.

Invert

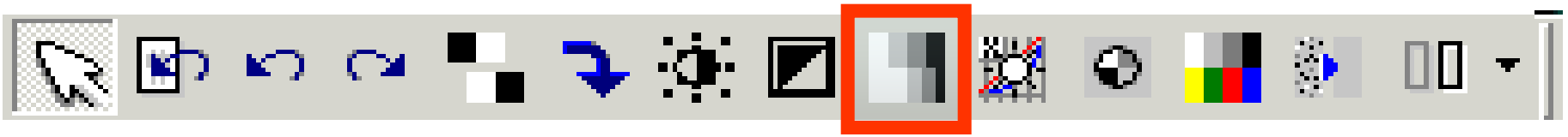


This tool inverts the colors of an image.

•Select the image you want to invert and press the Invert button.



Stretch Histogram

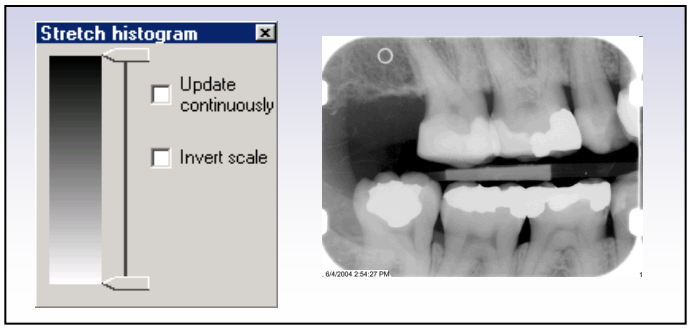


This tool allows you to adjust the what portion of the spectrum is shown in an image.

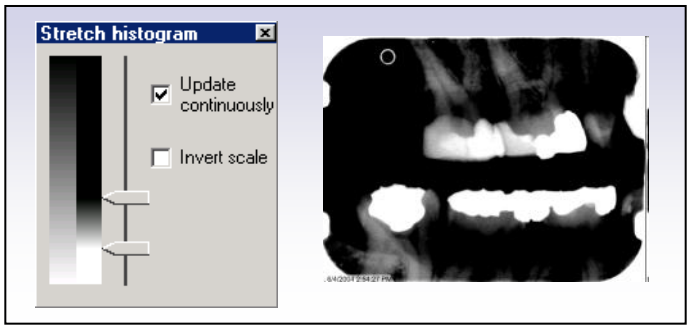
•Select an image and click on the Stretch Histogram button. The control box below will be displayed (shown below)

•Move the two arrows on the vertical bar to adjust the limits of the spectrum

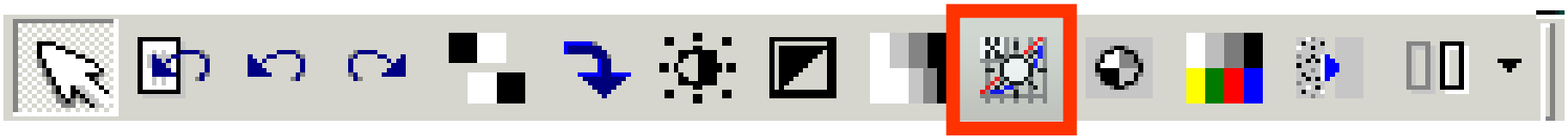
•Check Update Continuously if you want to see the changes being made as you move the indicator. Click Invert Scale if you wish to invert the image (performs the same function as the Invert tool)



Arrows Moved to show smaller spectrum of color

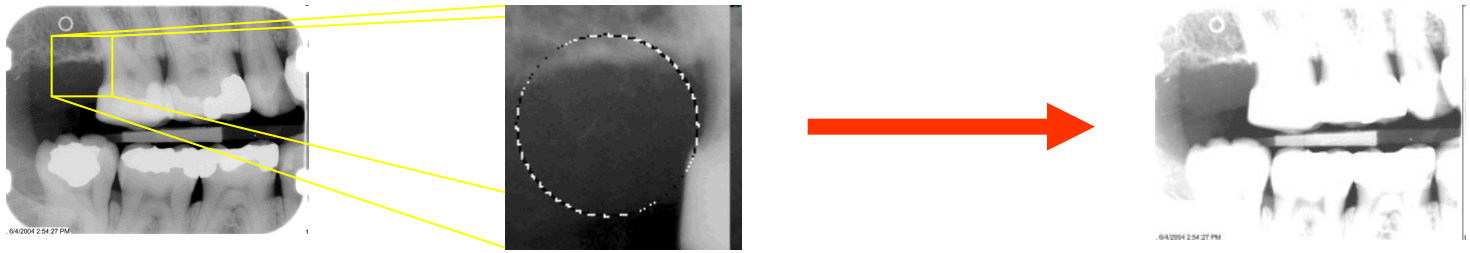


Optimize Brightness

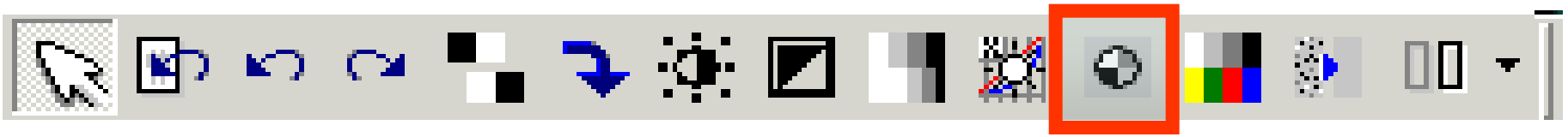


The Optimize Brightness tool changes the brightness setting to be optimal for a selected area of the image.

- Select an image and click the Optimize Brightness button
- Click and hold on the part of the image for which you want the brightness of the image to be optimized to
- Drag away from the point selected to select a circular area of the image (you will see the outline of a circle) and let up on the mouse button
- Click in the center of the circle you created



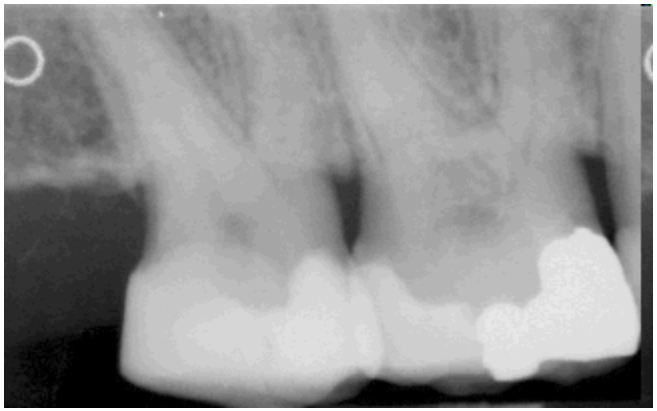
Equalization



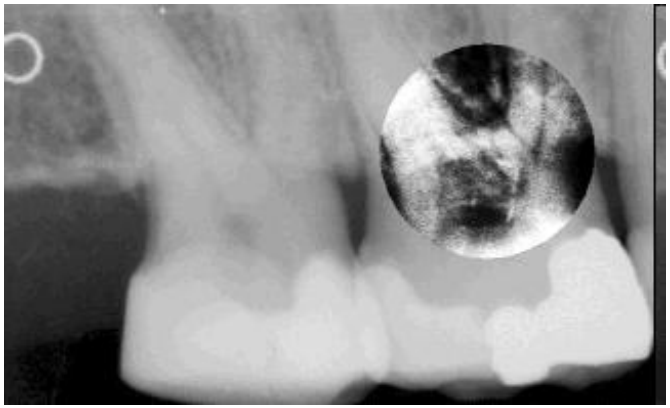
The equalization tool is used to make diagnosing easier.

- Click on the Equalization button.
- Move the mouse over an image and a circular section will be affected as you move the mouse
- To disable, click the image

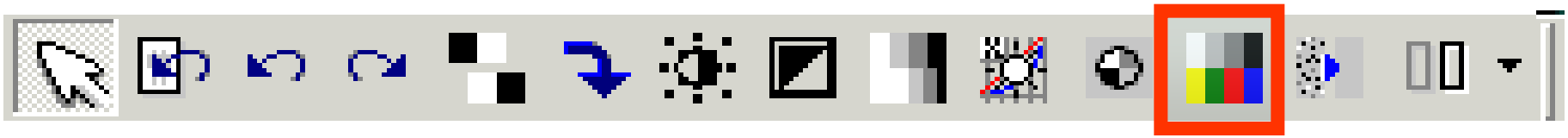
Equalization off



Equalization on

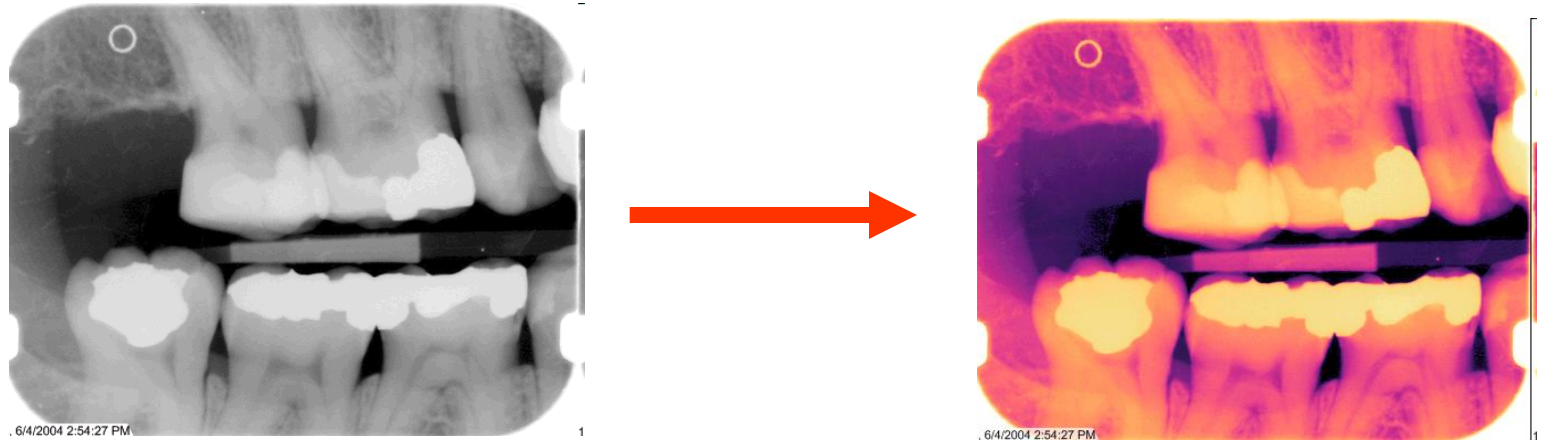


Colorize

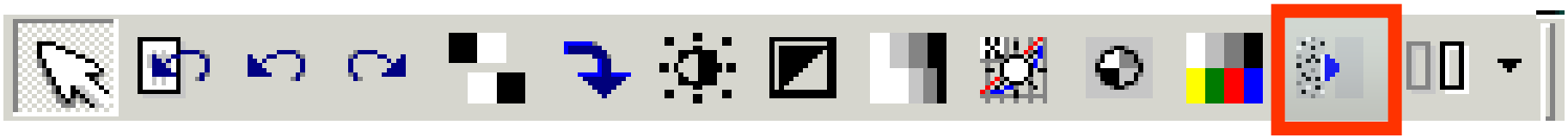


The Colorize tool turns a greyscale radiograph into a colored image and can be utilized in diagnosis

- Select and image and click on the Colorize button

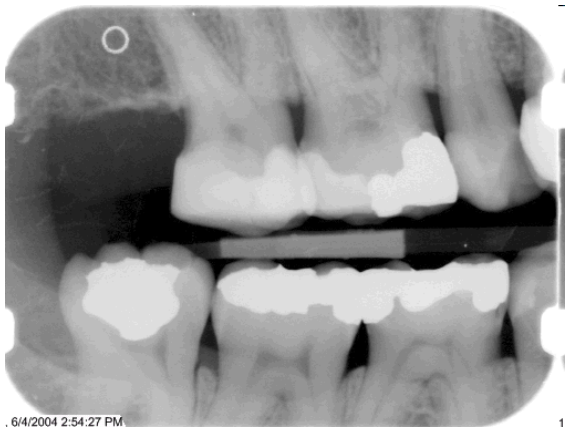


Noise Reduction

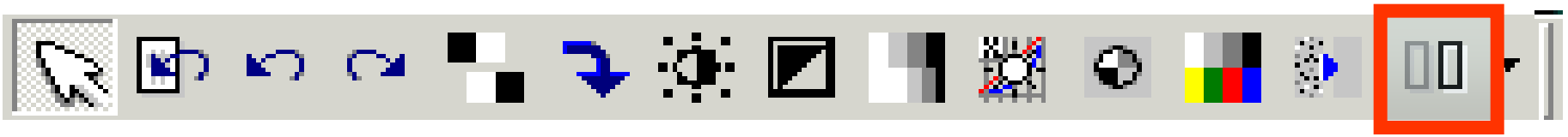


The Noise Reduction tool is used to clean up an image that is grainy or noisy

•Select an image and click the Noise Reduction button

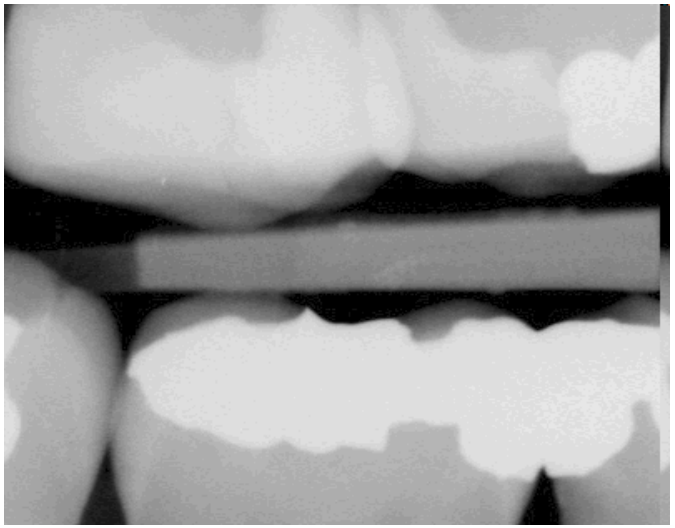


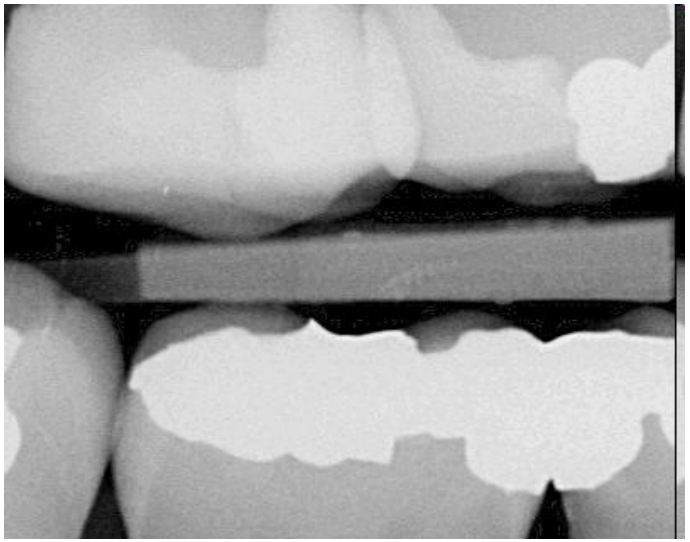
Edge Enhancement



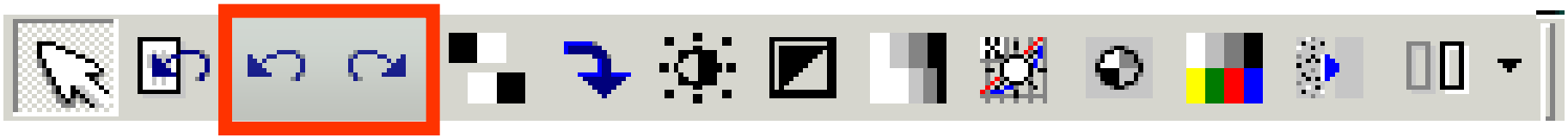
The Edge Enhancement tool reduces blurry edges to crisp, sharp edges.

- Click on an image and click the Edge Enhancement button



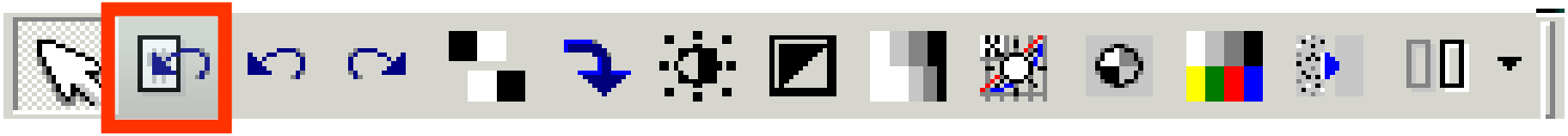


Undo and Redo



If you have made a mistake in editing an image, you can press the Undo button to change it back. If you decide you want to keep the change that you undid, press the Redo button.

Revert to Original



If you decide that you want to undo all changes that you have made to the image, press the Revert to Original button. The image will return to its original state.

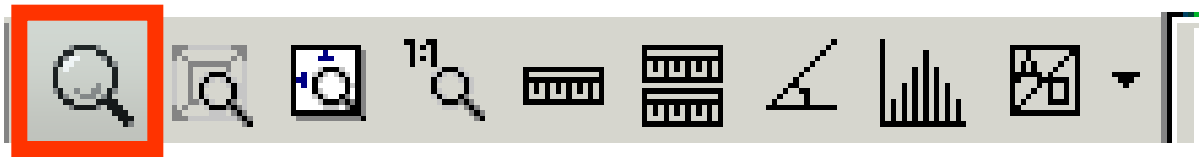
Analysis Tools

Analysis tools can be found on the right side of the toolbar.

These tools can be used for magnification, zooming in and out, measurement, and annotation.

These tools do not actually affect the image. Please note that any annotations that are made to the images can only be viewed in MiPACS Dental Enterprise Viewer. Other programs using the DICOM server will only see the image.

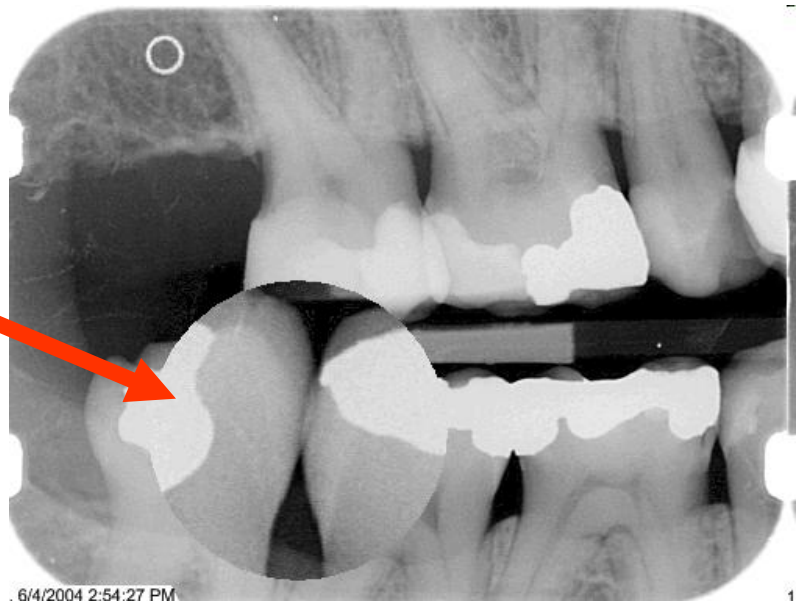
Magnifier



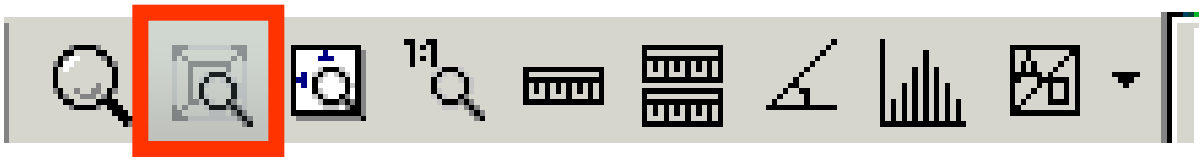
The magnifier tool magnifies a circular portion of the image controlled by the position of the mouse.

•Click and hold on an image and move the mouse to magnify different areas of the image

Magnified area



Zoom

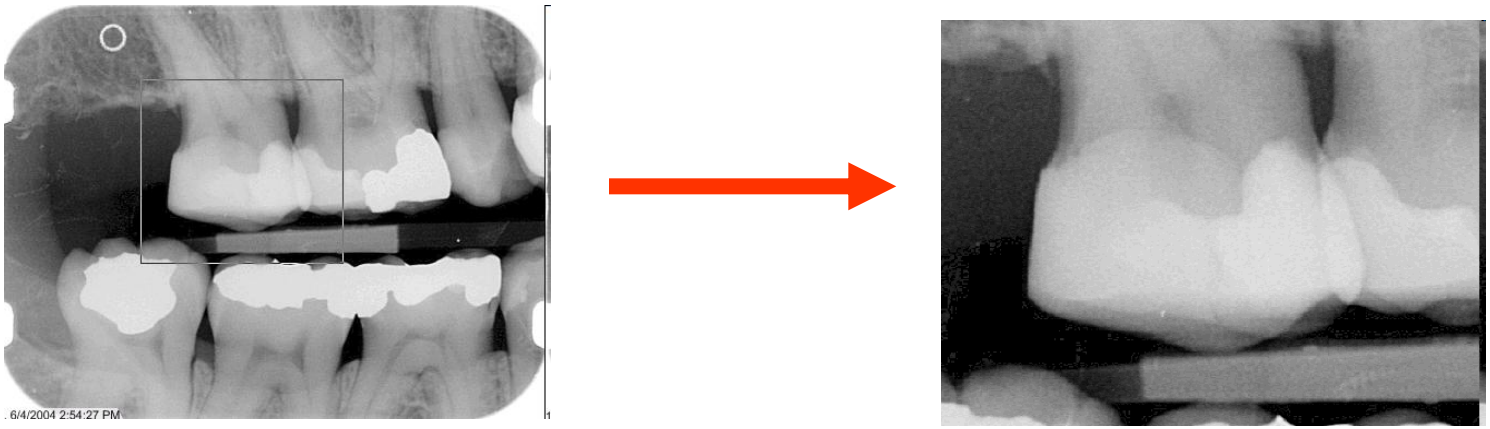


The zoom tool allows you to zoom in to a specific area of the image.

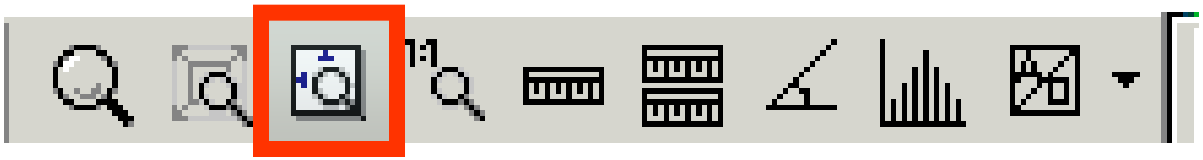
Click on the Zoom button

•Click and hold the mouse down on a corner of the portion of the image that you want to zoom in to.

•Drag the mouse to draw a box around the area you want to zoom in to and let up on the mouse.

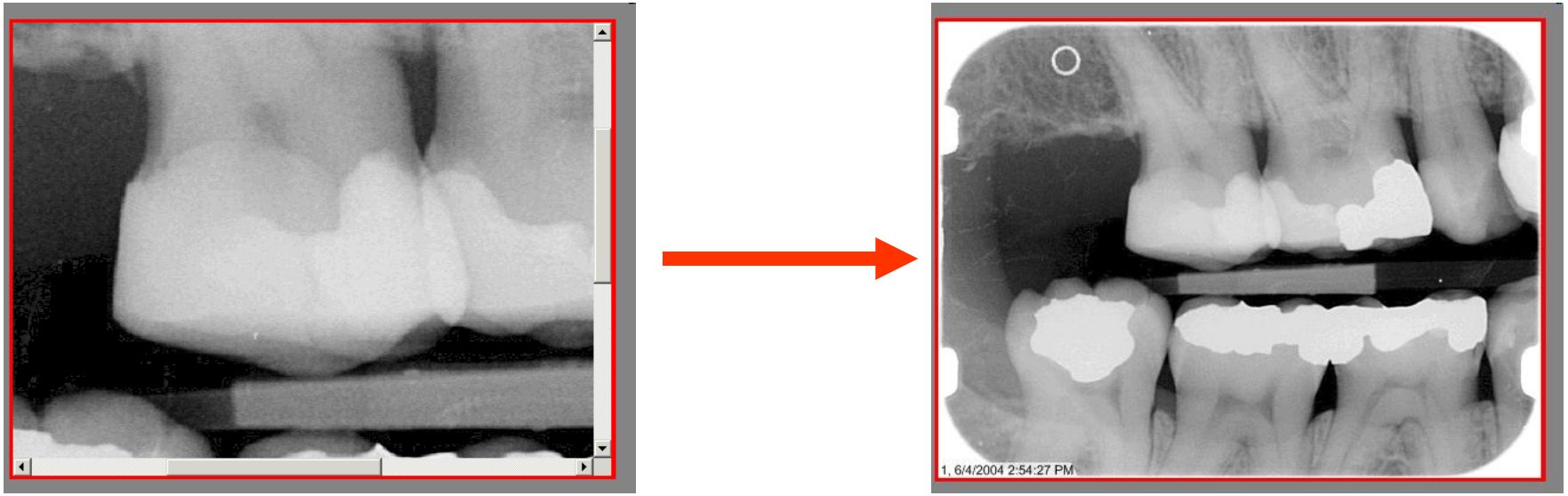


Fit Image to Frame

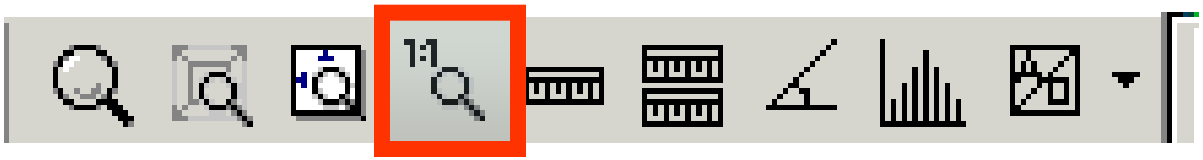


The Fit Image to Frame tool returns any image that has been zoomed in to the size of the original frame holding the image.

- Select and image and click on the Fit Image to Frame tool

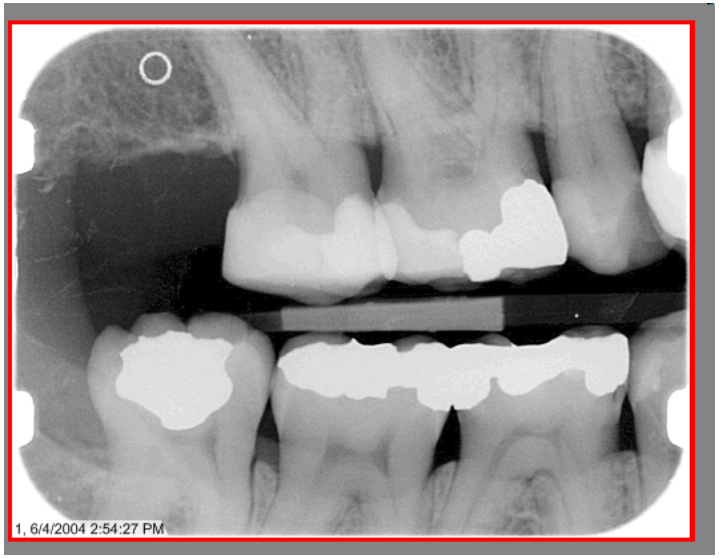


Fit to Screen Resolution

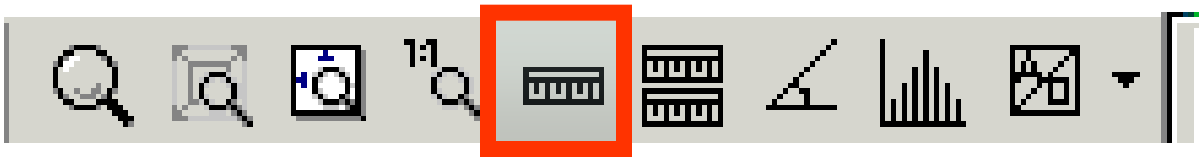


The Fit Image to Screen Resolution tool zooms in (or out) on the selected image so that it is displayed at the same resolution as the screen. This provides the clearest quality.

•Select and image and click on the Fit Image to Screen Resolution button

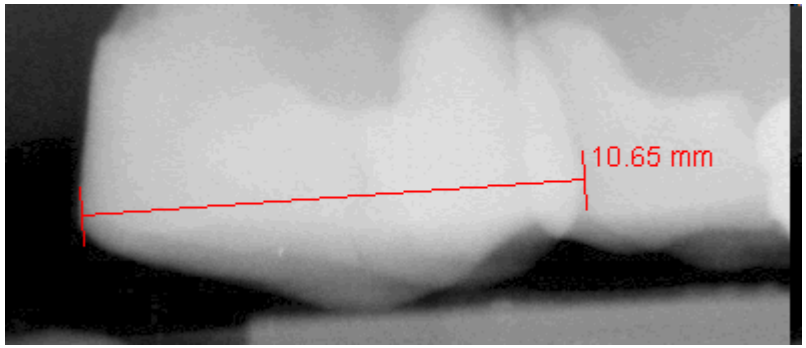


Ruler

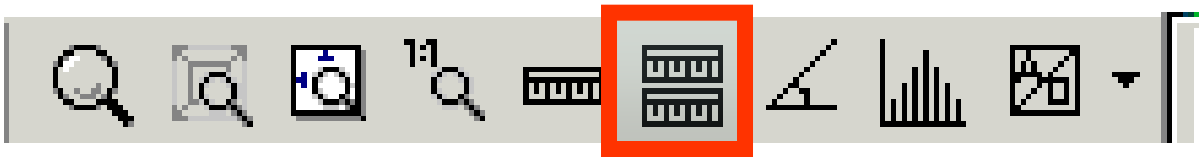


The Ruler tool allows you to measure the actual distance from one point to another on a radiograph.

- Click on the Ruler button
- Click and hold on an image at the first point of measurement
- Drag to the second point and let up on the mouse
- The measurement will show beside the endpoint of the line

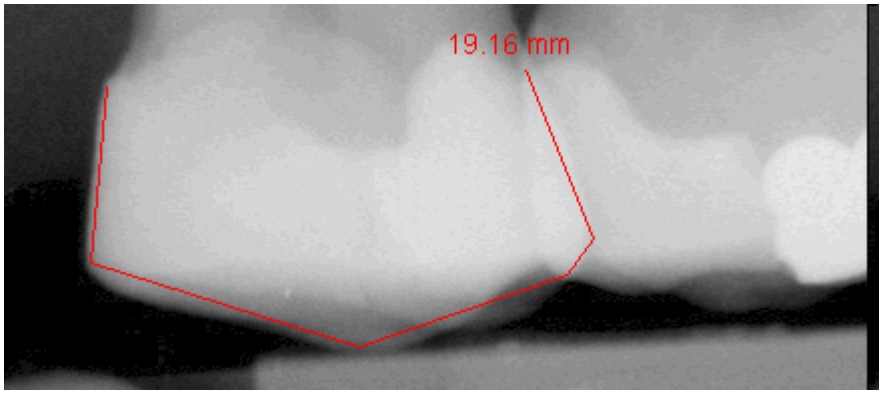


Polyruler

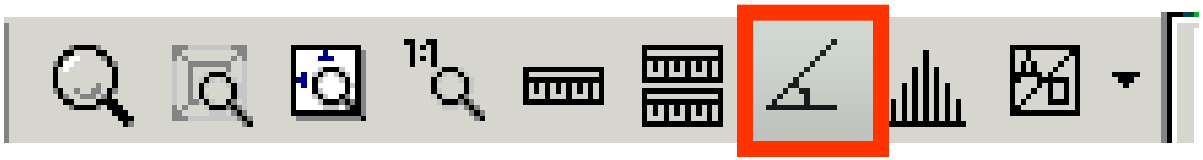


The Polyruler tool is similar to the ruler, but is used for non-linear measurements.

- Click on the Polyruler tool
- Click on the first point of the measurement, then click on the second point of the measurement, then the third, and so on
- Click the right mouse button for the last point of measurement



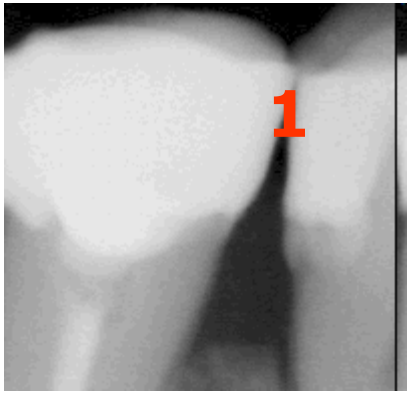
Protractor

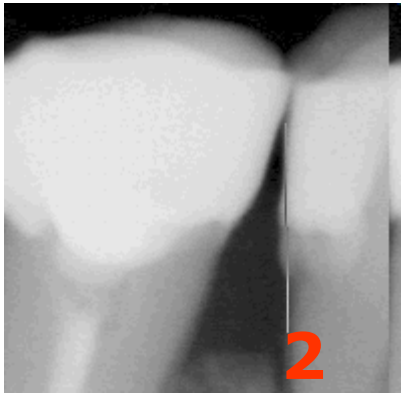


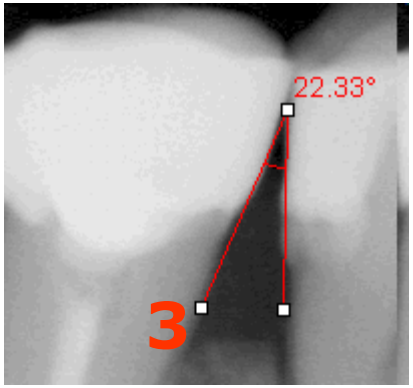
The protractor tool can be used to measure angles.

Select and image and click on the protractor tool

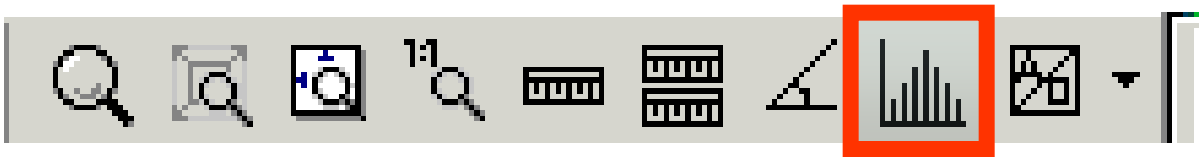
- Click on (1) the point where the angle will be measures
- Click on (2) the point where the first line will end
- Click on (3) the point where the second line will end and the measurement of the angle will appear in red





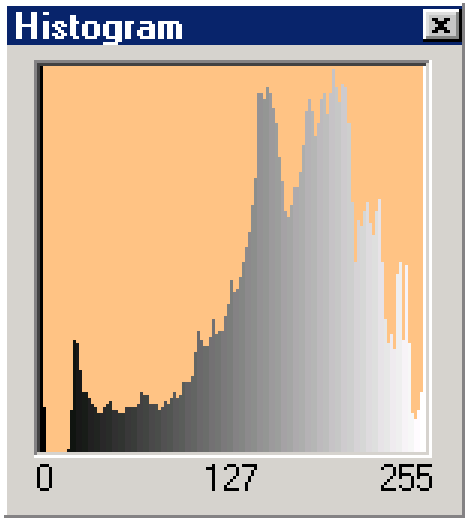


Show/Hide Histogram

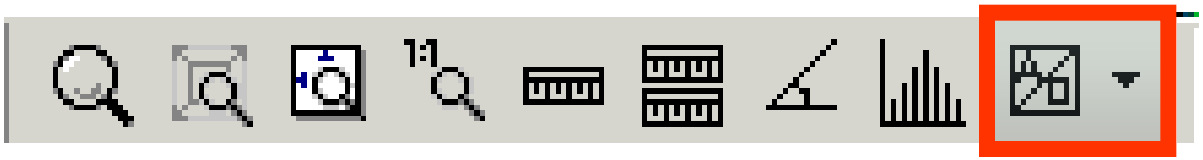


The Show/Hide Histogram button activates the histogram window. The histogram is a graph of the quantity of different shades of gray in a radiograph.

•Select an image and click the Show/Hide Histogram button and the window shown below will appear.



Annotate



The annotation tool can be used to add comments, shapes, freehand sketches, pointers, and measurements to images without affecting the image itself. To use these tools, click on the Down-arrow next to the annotaion button and select a tool to use.

Note that annotations are only viewable in MiPACS Dental Enterprise Viewer.